SCIENCE

FRIDAY, AUGUST 26, 1887.

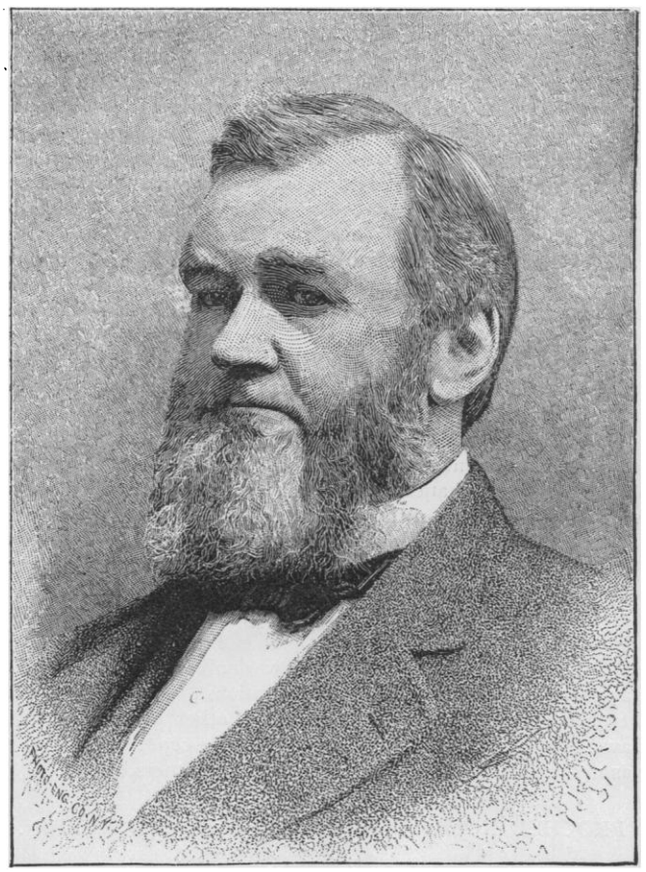
A FEW WEEKS AGO Stanley's death was announced by a cable despatch from St. Thomé. A missionary at Matadi was said to have received the news from a negro who had come from the upper Kongo. A few days ago the French government received a telegram to the same effect from Zanzibar. Both these reports are utterly unreliable. The last letters from Stanley were dated from Aruwimi Falls, June 18. He informed his friends of his safe arrival there, and says that the natives report numerous falls and rapids farther up the river. Therefore he was about to begin his land journey to the Mvutan Nsige. No later news has been received at

ALVAN CLARK.

the mouth of the Kongo, and the arrival at Zanzibar of letters or news from his expedition at this date is out of the question, as the distance is very great and part of the route difficult. It is probable that at the present time Stanley is very near Emin Pacha, or has met him. The messengers who were sent from Zanzibar to inform Emin of Stanley's expedition were detained some time by Mwanga, and only recently reached Unyoro. Here they learned that Emin had crossed the Mvutan Nsige, and gone up the river which probably connects the Muta and Mvutan Nsige. They were unable to see him, and therefore were expecting his return. From these reports it appears that Emin never intended to make his way through Uganda, as was said some time ago. News from Central Africa reaches us now with such wonderful speed that we may expect to hear soon of the meeting of Emin and Stanley on the shore of the Mvutan Nsige. Emin's latest letters show that the condition of his province has greatly improved, and that at the present time peace prevails on the banks of the upper Nile; but he says that the negro tribes are at the present time much more powerful than they were before the war, as they have obtained numerous guns. Therefore Stanley's help will be very welcome, and probably enable him to carry on the work of civilization which he has so successfully begun.

TWO LOSSES TO SCIENCE.

THIS week we have to chronicle the deaths of two leading American scientific men. Spencer F. Baird, born at Reading, Penn., Feb. 3, 1823, died at Wood's Holl on Aug. 22. Alvan Clark died the same day at his home in Cambridge, at the age of eighty-three, having been born, at Ashfield, Mass., March 8, 1804. We have already told, in *Science*, of Baird's life. He was from youth interested in natural history, and so devoted his time and energies that he was early an honored companion of the best. His executive powers finally led to his being singled out as a fit head for first one and then another of the rapidly growing government scientific organizations, and it is for his good conduct of these affairs that we now best know him, and for which he received the sincere respect of the public. Of Clark it might be said that we came near losing him. He was forty before he began his life-work which made him famous. His oldest son, as many a boy has before and since, wished a telescope, and, per force of circumstances, must make it.



SPENCER F. BAIRD.

He asked his father's help in grinding and polishing the piece of speculum metal he had obtained for his reflector. The father had never seen a mirror or lens ground and polished. But, as he once said, "a father tries pretty hard when a child asks for help;" and this father did try, so that now the renown of his achievements as a maker of lenses is world-wide.

Mr. Clark had been in his usual good health up to a fortnight ago, when he complained of illness, and though no disease of an organic nature appeared, he gradually failed, and death resulted from old age. He was essentially a New England man. He labored on the farm until he reached his twenty-second year, and then, having by

his own endeavors acquired considerable skill at painting, secured a position as a calico engraver at Lowell. Here he married Miss Maria Pease, and last year they celebrated the sixtieth anniversary of their wedding. From 1826 to 1835 he was employed at the Merrimac works at Lowell, designing patterns, a part of that time being employed at other establishments of a similar character.

During all that period he kept up his practice as a painter, he being an enthusiast in that direction. In 1835 he discontinued his business as a calico designer and engraver, and moved to Boston and established a studio on Tremont Street, selecting Cambridge as a place of residence, his home being on Prospect Street. His pictures of the late Dr. Hare of Philadelphia and that of Dr. Hill of Cambridge are specimens of his skill and taste. At the house on Brookline Street there are a number of specimens of his art, among which are the faces of Daniel Webster, Constable Clapp, renowned in his day as a skilful detector of crimes, and of a son who died when a youth, painted from memory. During this time sons and daughters were born to him, George B. in 1827 and Alvan G. in 1832, both of whom are living.

He began with his sons in 1846 the manufacture of telescopes. The younger son, Alvan G., at first entered into other business, but finally settled down to that of telescope making, and all three, under the name and style of Clark & Sons, have worked together for nearly forty years.

In 1850 Mr. Alvan Clark went to Europe and spent a great deal of his time with Mr. W. R. Dawes, the English astronomer, and while in his observatory discovered a new star, now known as companion to '99 Hercules.' Mr. Clark afterward had an extensive correspondence with Mr. Dawes, and spoke of his connection with him as the closest friendship of his life. Soon after his return from Europe in 1860 he received the first order for a large telescope in this country from the University of Mississippi, the glass being 18½ inches, three inches larger than any that had been hitherto successfully used in the world. The war prevented its sale to the southern college, and it was finally purchased by the University of Chicago. Then followed the construction of two glasses of twenty-six inches each, one being disposed of to the University of Virginia and the other placed in the observatory at Washington. Their reputation rapidly spread through Europe, and orders came faster than they could be filled. The number of instruments they have made is very large. The cheapest one cost $300, while the national telescope was sold for $46,000, and the cost of the Lick glass was set at $50,000 without the mounting.

This was the work of a man who never had seen a lens in process of construction in the hands of any one out of his own shop. Mr. Clark was emphatically a self-made man. His only education was what he received in the public schools of western Massachusetts. His reputation was patiently, steadily, and justly earned, His extraordinary power seemed to be acuteness of the eye, of the touch, and of the understanding, combined with unlimited patience. Not long since he said: "I owe largely my recognition by the scientific world to Mr. Dawes. I had, as I thought, with one of my telescopes discovered several new double stars. I wrote to Dawes, asking him to verify my observations. He answered that they were real discoveries. I reported other discoveries. Mr. Dawes wrote: 'Where did you get your telescope?' 'I made it,' was my reply. I sold him that glass and five others."

PROCEEDINGS OF THE AMERICAN ASSOCIATION.

Section C.

THE address of Vice-President Prescott was on the chemistry of nitrogen as disclosed in the constitution of the alkaloids. He said, "The character of nitrogen is a challenge to chemical skill. Mocking us by its abundance in its free state, the compounds of this element are so sparingly obtained that they set the rate of value in supplies for the nourishment of life, — the agent chosen and trusted for projectile force in arts of war and of peace, — yet the manufacture of its most simple and stable compound has been a vain attempt, and it is one urged anew by the chemical industries. Moreover, nitrogen holds the structure of the aniline dyes, and governs the constitution of the vegetable alkaloids. In research the nearest approaches to the molecule as a chemical centre have been reached through organic chemistry. Carbon was the first and hydrogen has been the second element to give to organic chemistry a definition. At present, carbon is looked upon as the member for fixed position, and hydrogen as the member for exchange, in organic families. Nitrogen comes next in turn to receive attention. The study of the carbonaceous compounds of nitrogen promises to do for organic chemistry what the latter has done for general science."

The speaker then outlined the history and present state of the structural chemistry of the vegetable alkaloids, as follows: "1. Nitrogenous bases as derivatives of ammonia. 2. Nitrogenous bases represented by aniline. 3. The pyridine type in the vegetable alkaloids. The constitution of the pyridine and quinoline series was ascertained by Koerner and by Baeyer in 1870. These bodies can be obtained from bone-oil and from coal-tar. They are of a remarkable chemical structure. Like aniline, they have the closed chain of six positions, but, unlike aniline, they have one of these positions held by nitrogen. The introduction of the atom of nitrogen into the closed ring so affects the qualities of the molecule that stable addition-products are formed. About 1879 it began to appear that the vegetable alkaloids in general are of the pyridine type, of 'aromatic' composition. In this type the structure of ammonia is not violated; and the theories of Liebig, Wurtz, and Hofmann are not superseded. Within the last three or four years the veil has been drawn from the structure of the chief alkaloids of plants. Even before that, the alkaloids of black pepper, tobacco, and hemlock, of very simple composition, were studied with success. The alkaloids of the belladonna-root, the cinchona-bark, and the coca-leaf, are now subject to an increasing measure of constructive operation in the laboratory. Morphine is convertible into codeine, and the efforts to convert strychnine into brucine, and cinchonine into quinine, ought to succeed. The necessary studies of position in the pyridine molecule are being entered upon. Some good medicinal alkaloids are being made by art. It may come that the identical alkaloids of nature will be made by art. Not by chance efforts, however, nor by premature short-cuts, but, if at all, through the well-earned progress of the world's chemistry, will these results be gained. And it speaks enough for the rate of this progress to say that one of the very first of the forward steps here recounted was taken by a man still living as a contributor. Due honor for what his hands have done, and all gratitude for what his eyes have seen."

Thirty-five papers and two committee reports were presented to the section. The papers may be classified as follows: — *Analytical Chemistry*, on a new apparatus for fractional distillation, by T. H. Norton; on the improvement in stand for electrolysis, by W. H. Herrick; on a process for separation of alkaloidal poisons, by Arthur L. Greene; on the determination of nitrogen by soda-lime, by W. O. Atwater; on indirect determination of calcium, by W. H. Herrick; on a new method for the preparation of anhydrous aluminum chloride, by C. F. Mabery. *Plant Chemistry* (agricultural and pharmaceutical), on the composition of wild-cherry bark, by F. B. Power and Henry Weimar; on the chemical composition of the juices of sorghum-cane in relation to the production of sugar, by H. W. Wiley; note on the chemistry of germination, and on the absorption of nitrogenous nutriment by the roots of plants, by William McMurtrie; on a compound rich in carbon occurring in some plants, by Helen C. DeS. Abbott. *Organic Chemistry*, on the fatty acids of drying oils, by L. M. Norton; on some higher homologues of cocaine, by F. G. Novy; on the salts of benzene-sulphonic acid with the amines, on some new metallic salts of benzene-sulphonic acid, on the amine salts of para-toluene-sulphonic acid, on the action of silicon fluoride on acetone, on the limits of the direct bromination of acetone and on the action between ammonium sulphocyanide and monobrom-acetone, on the action of chlorine on acenaphthene, on the urates of ammonium and the amines of the fatty acids, and on some new nitro-prussides, by T. H. Norton; on the action of aromatic amines upon certain substituted unsaturated acids, and on the constitution of the sulphur compounds in crude petroleum oils, by C. F. Mabery. *Mineral Chemistry*, on the composition of Lockport Sandstone, by H. W. Weld; on the processes of soil-formation from the north-western basalts, by E. W. Hilgard; on the occurrence in nature of a copper antimonide, and on certain alloys of calcium and zinc, by T. H. Norton; analyses of two manganese minerals, by F. C. Novy. *Theoretical Chemistry*,